MIREX AND CHLORDECONE
CAS # 2385-85-5 and 143-50-5

Agency for Toxic Substances and Disease Registry ToxFAQs **September 1996**

This fact sheet answers the most frequently asked health questions (FAQs) about mirex and chlordecone. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to mirex and chlordecone occurs mainly from touching or eating soil or food that contains the chemicals. At high levels, these chemicals may cause damage to the skin, liver, or nervous and reproductive systems. Mirex has been found in at least 7 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA); chlordecone has been found at 2 sites.

What are mirex and chlordecone?

(Pronounced mīʹrĕksʹ and klōrʹdē-kōn)

Mirex and chlordecone are two separate, but chemically similar, manufactured insecticides that do not occur naturally in the environment. Mirex is a white crystalline solid, and chlordecone is a tan-white crystalline solid. Both chemicals are odorless.

Mirex and chlordecone have not been manufactured or used in the United States since 1978. Mirex was used to control fire ants, and as a flame retardant in plastics, rubber, paint, paper, and electrical goods from 1959 to 1972. Chlordecone was used as an insecticide on tobacco, ornamental shrubs, bananas, and citrus trees, and in ant and roach traps. Mirex was sold as a flame retardant under the trade name Dechlorane, and chlordecone was also known as Kepone. Use of trade names is for identification only and does not imply endorsement by the Agency for Toxic Substances and Disease Registry, the Public Health Service, or the U.S. Department of Health and Human Services.

What happens to mirex and chlordecone when they enter the environment?

- Mirex and chlordecone break down slowly in the environment, and they may stay for years in soil and water.
- They do not evaporate to any great extent from surface water or surface soil.
- Mirex and chlordecone do not dissolve easily in water, but they easily stick to soil and sediment particles.
- They are not likely to travel far through the soil and into underground water.
- They can build up in fish or other organisms that live in contaminated water or that eat other contaminated animals.

How might I be exposed to mirex and chlordecone?

- Touching or ingesting contaminated soil near hazardous waste sites.
- Ingesting contaminated fish or other animals living near hazardous waste sites.
- Nursing infants of mothers living near hazardous waste sites may be exposed to mirex through their mothers' milk.
- Drinking water or breathing air is not likely to cause exposure because these compounds do not easily dissolve in water or evaporate.

How can mirex and chlordecone affect my health?

We do not know how mirex affects the health of people. Workers who were exposed to high levels of chlordecone over a long period (more than one year) showed harmful effects on the nervous system, skin, liver, and male reproductive system. These workers were probably exposed mainly through touch-

ing chlordecone, although they may have inhaled or ingested some as well.

Animal studies with chlordecone have shown effects similar to those seen in people, as well as harmful kidney effects, developmental effects, and effects on the ability of females to reproduce. We do not know if these last three effects also occur in people.

Animal studies have shown that ingesting high levels of mirex can harm the stomach, intestine, liver, kidneys, eyes, thyroid, and nervous and reproductive systems.

How likely are mirex and chlordecone to cause cancer?

The Department of Health and Human Services (DHHS) has determined that mirex and chlordecone may reasonably be anticipated to be carcinogens.

There are no studies available on whether mirex and chlordecone are carcinogenic in people. However, studies in mice and rats have shown that ingesting mirex and chlordecone can cause liver, adrenal gland, and kidney tumors.

Is there a medical test to show whether I've been exposed to mirex and chlordecone?

Tests are available that measure the amount of mirex in blood, feces, fat, or milk, and the amount of chlordecone in blood, saliva, feces, or bile. However, these tests may require special equipment and they may not be available at your doctor's office.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 1 part of mirex per trillion parts of surface water (1 ppt) to protect fish and other aquatic life from harmful effects.

The EPA suggests that ingesting an amount of mirex equal to 200 picograms (pg) per kilogram (kg) of your body weight per day is not likely to cause significant harmful health effects.

The Food and Drug Administration (FDA) suggests that eating fish and other foods with concentrations below 100 ppt of mirex, or concentrations of chlordecone below 400 ppt, will not cause harmful health effects in people.

The EPA requires that discharges or spills into the environment of 1 pound or more of chlordecone be reported.

The National Institute for Occupational Safety and Health (NIOSH) recommends that average workplace air levels not exceed 1 microgram per cubic meter (1 μ/gm^3) of chlordecone over a 10-hour period.

Glossary

Carcinogen: A substance that can cause cancer.

CAS: Chemical Abstracts Service.

Ingesting: Taking food or drink into your body.

Insecticide: A substance that kills insects.

Kilogram (kg): One thousand grams.

Microgram (μg): One millionth of a gram.

Picogram (pg): One trillionth of a gram.

Sediment: Mud and debris that have settled to the bottom of a body of water.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for mirex and chlordecone. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-639-6359. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.